

# Enhancing the treatment of eating disorders: insights and challenges from the Regional Residential Center “Mariconda” in Salerno

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## Summary

**Objective.** Eating Disorders are serious psychological conditions causing significant physical and mental health impairments. They have high mortality and suicide rates, and many affected individuals do not receive adequate treatment.

**Aim.** This study aimed to evaluate the preliminary results of the multidisciplinary and integrated treatment provided at the Regional Residential Center for Eating Disorders “Mariconda” in Salerno. The focus was on assessing the impact of this treatment on patients with Eating Disorders, considering various clinical, anthropometric, and psychopathological factors.

**Methods.** The study employed an integrated approach, utilizing standardized evaluation scales such as SCL-90, BUT, CIA, EDI-3, EDE-Q, and EDS to measure improvements. The sample included 31 patients who completed the residential program from January 2022 to December 2023. Assessments were conducted at the beginning (T0) and end (T1) of the program. The one-way ANOVA test was used to analyze the statistical significance of treatment effects.

**Results.** Significant improvements were observed across various measures. Psychopathological assessments indicated reduced anxiety, depression, and obsessive compulsive symptoms. Clinical impairment and body image disturbances showed notable decreases. There was a substantial reduction in eating disorder symptomatology, including binge eating and restrictive behaviors. Additionally, a significant and highly notable improvement in Body Mass Index was recorded.

**Conclusions.** The findings suggest that the multidisciplinary and integrated treatment approach at “Mariconda” is highly effective in managing eating disorders. The results underscore the importance of comprehensive care in addressing the complex needs of this population. Future research should include larger sample sizes and long-term follow-up to further validate these findings and enhance treatment strategies.

**Keywords:** eating disorders, multidisciplinary treatment, residential care, treatment outcomes, integrated approach

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## INTRODUCTION

Eating disorders (EDs) have been defined as “characterized by persistence disturbance of eating or eating-related behavior that results in the altered consumption or absorption of food and that significantly impairs health or psychosocial func-

tioning. The DSM-5 has reorganized the classification of EDs by placing them in the “Feeding and Eating Disorders” chapter, integrating changes from the previous DSM-IV-TR. It includes new disorders like avoidant/restrictive food intake disorder (ARFID), rumination disorder, and pica, which were previously categorized under childhood disorders but are now part of a unified chapter for both childhood and adulthood. The DSM-5 also features Anorexia Nervosa (AN), Bulimia Nervosa (BN), Binge Eating Disorder (BED), as well as unspecified disorders. Significant changes include the removal of the amenorrhea criterion in AN and a lowered threshold of binge episodes for BN, alongside the deletion of its subtypes. BED is now officially recognized as a distinct diagnosis. The DSM-5 aimed to clarify diagnostic criteria and reduce the frequency of categorizing patients under the broad “other specified feeding or eating disorder” category, previously known as EDNOS, to ensure more precise diagnoses<sup>12</sup>. The reported prevalence of EDs in the general population has varied widely, ranging from 0.1% to 3.8%<sup>3</sup>. Global incidence rates have increased from 3.4% calculated between 2000 and 2006 to 7.8% between 2013 and 2018<sup>4</sup>. The incidence of a first diagnosis of an ED has increased during the Covid-19 pandemic; an overall excess of 15.3% was observed compared to 2019<sup>5</sup>. Individuals with EDs may also develop severe somatic complications that can increase the risk of suicide<sup>6</sup> and mortality rates. AN has among the highest mortality and suicide rates in mental health<sup>7,8</sup>. Over 3.3 million healthy life years are lost worldwide due to EDs each year, and many more are lost to disability due to medical and psychiatric complications<sup>9</sup>. Suicide accounts for approximately 20% of non-natural deaths among people with ED<sup>10,11</sup>. All EDs are marked by frequent psychiatric and physical comorbidity<sup>12</sup>, and impaired physical, social, and work functioning<sup>13,14</sup>. The etiopathogenesis of EDs is thought to be multifactorial, with models postulating the presence of predisposing factors (genetic vulnerability)<sup>16</sup>, temperamental traits, and childhood traumatic experiences<sup>17</sup>, precipitating factors (the environmental context at the time of onset)<sup>18</sup>, and maintaining factors (secondary aspects of the illness, such as brain adaptation induced by malnutrition, social isolation, and changes in the environment)<sup>19</sup>. However, a clear understanding of this etiopathogenesis is currently lacking, although it would be essential to improve treatment effectiveness<sup>20</sup>. Current treatments for EDs encompass both psychotherapy and pharmacological options. Psychotherapy aims to alleviate symptoms, support healthy body weight maintenance, and improve quality of life for individuals with EDs. For adults with AN, Cognitive Behavior Therapy-Enhanced (CBT-E), Specialist Supportive Clinical Management (SSCM), and Maudsley Anorexia Nervosa Treatment for Adults (MANTRA) are commonly used, although no single method is proven superior. CBT-E is a personalized approach focusing on maintaining factors of the disorder and is effective in both outpatient and inpatient settings. Cognitive Remediation Therapy (CRT) promotes cognitive flexibility without

directly addressing eating issues, and its extension, CREST, tackles socio-emotional challenges. SSCM combines symptom management with supportive psychotherapy, whereas MANTRA targets cognitive rigidity and socio-emotional impairments. For children and adolescents with AN, family-based treatment (FBT) is recommended, emphasizing family involvement in recovery. Alternatives such as CBT and systemic family therapy are considered for those unresponsive to FBT. CBT is the preferred approach for treating BN, yielding better results in improving eating behaviors and psychological symptoms compared to interpersonal and psychodynamic psychotherapies. For BED, both cognitive behavior psychotherapy and interpersonal therapy are effective, although neither significantly affects weight loss. Behavioral weight loss (BWL) treatment aids in weight reduction but is less effective in reducing binge eating behaviors. Pharmacological options are limited; fluoxetine is approved for BN and lisdexamfetamine for BED. No specific medications are approved for AN, though SSRIs are explored with mixed findings, while olanzapine shows potential in promoting weight gain and reducing anxiety. Fluoxetine reduces binge eating and purging in bulimia nervosa, and topiramate, although it has cognitive side effects, helps reduce binge eating episodes in both bulimia and BED. Overall, psychotherapy remains the cornerstone of ED treatment, emphasizing the need for ongoing research to optimize pharmacological interventions<sup>21</sup>.

Access to treatment for EDs is inadequate, with only 20-25% of individuals receiving professional consultation for their symptoms<sup>22</sup>. Barriers to treatment access include stigma, lack of insight into the illness, shame, scarce availability of evidence-based interventions, and fragmented or underfunded health services<sup>23,24</sup>, which contribute to low recovery rates and frequent chronicity<sup>25</sup>.

In Italy, guidelines for the treatment of EDs have been licensed by the Ministry of Health and follow the most common international evidence-based treatment options<sup>26</sup>. Despite these guidelines, Volpe et al.<sup>27</sup> revealed an important delay from the onset of ED symptoms to treatment and an unequal presence throughout the whole country of the three levels of care (outpatient, semi-residential, residential) identified as necessary by the same guidelines.

To implement innovative interventions in mental health, the Italian Government has introduced the National Action Plan for Mental Health (NAPMH) with the aim of strengthening the capacity to respond to crises in healthcare services and providing the necessary investments to reinforce the ability of healthcare services to respond to the crisis caused by the epidemiological emergency. To this end, some homogeneous areas, deemed priorities, have been identified to orient specific and differentiated projects, at regional and local levels, which involve the implementation of care pathways capable of intercepting the current demands of the population and contributing to the renewal of the organization and integration of services, work methods, and clinical programs offered. In

particular, this program focuses on: 1) Psychiatric Residential Centers in adulthood; 2) Therapeutic rehabilitative residential and semi-residential interventions for neuropsychiatric disorders in childhood and adolescence; 3) Definition of care pathways to be activated in Mental Health Departments for schizophrenia, mood disorders, and severe personality disorders; 4) Guidelines for neuropsychiatric disorders in developmental age.

In this context, the Regional Residential Center for EDs “Mariconda”, located in Salerno, stands out as the only operational residential care center in Campania region, Italy. The multidisciplinary treatment proposed is characterised by individual and group psychotherapy, rehabilitation and nutritional counselling, individualised pharmacological treatment, individual and group rehabilitation programmes structured around coping skills, psychoeducation, metacognition and social skills. This study aims to evaluate the preliminary results of the multidisciplinary and integrated treatment provided at this center.

## METHODS

In order to be accepted into the rehabilitation process, patients need to have a formal diagnosis of ED and a willingness to participate in the residential programme. Exclusion criteria for starting residential care are the presence of serious medical conditions requiring immediate hospitalization, active substance abuse and severe psychiatric comorbidities that may hinder participation in the programme. During treatment, taking into account the patients’ clinical, anthropometric and psychopathological factors, we adopted a holistic approach characterized by psychotherapy, nutritional and cognitive rehabilitation. To evaluate the effectiveness of the treatment provided, standardized evaluation scales were employed to quantitatively measure progress at the beginning (T0) and at the end (T1) of the program.

### Psychometric evaluations

The psychometric scales used were:

1. Structured Clinical Interview for DSM-5- Clinical Version (SCID-5-CV): semi-structured interview to formulate diagnosis according to DSM-5 criteria <sup>28</sup>.
2. Eating Disorder Inventory-3 (EDI-3): an assessment tool designed to evaluate psychological traits related to EDs. It includes 91 items across 12 primary scales and provides six composite scores for a comprehensive understanding of an individual’s risk for EDs. Although the EDI-3 lacks specific cutoff scores for diagnosis, it uses normative data to help clinicians identify significant risk levels, guiding further assessments and interventions <sup>29</sup>.
3. Eating Disorder Examination-Questionnaire (EDE-Q): self-reported tool used to assess core symptoms of EDs. There are no fixed cut-off scores for diagnosis, but a Global Score of 4 or higher often indicates clinically significant symptoms, suggesting the need for further investigation or intervention. The EDE-Q aids in diagnosis and treatment planning by providing insights into both behavioral and attitudinal aspects of EDs <sup>30</sup>.
4. Body Uneasiness Test (BUT): assessment tool used to measure body image concerns and related distress, particularly in the context of EDs. The test provides a Global Severity Index (GSI) to indicate overall severity of body image disturbance, with higher scores suggesting significant uneasiness that may require clinical attention. The BUT aids clinicians in identifying the level and specific areas of body image distress, supporting tailored therapeutic interventions <sup>31</sup>.
5. Symptom Checklist-90 (SCL-90): assessment tool used to evaluate a wide range of psychological symptoms and distress. Elevated scores suggest significant psychological distress that may require further evaluation. The SCL-90 is widely used to support diagnosis and treatment planning in mental health settings <sup>32</sup>.
6. Exercise Dependence Scale (EDS): it assesses traits and symptoms associated with exercise dependence. Higher scores in these areas indicate a greater risk of exercise dependence. The EDS is useful for identifying individuals at risk and guiding interventions to promote healthier exercise habits <sup>33</sup>.
7. Clinical Impairment Assessment (CIA): evaluates the functional impact of EDs. It generates a Global Score from 0 to 48, with scores of 16 or higher indicating clinically significant impairment. The CIA helps clinicians tailor treatment plans by focusing on improving the individual’s overall functioning and quality of life <sup>34</sup>.

Additional assessment tools included:

- Minnesota Multiphasic Personality Inventory-2 (MMPI-2): a comprehensive psychological assessment tool used to evaluate personality and psychopathology through 567 true-false items. Results are reported as T-scores, where scores above 65 are considered clinically significant and may indicate psychological issues requiring further evaluation. The MMPI-2 is utilized in clinical, forensic, and organizational settings to aid in diagnostic decisions and guide treatment planning <sup>35</sup>.
- Minnesota Multiphasic Personality Inventory-Adolescent (MMPI-A): the adolescent version of the MMPI-2 <sup>36</sup>.

### Experimental sample

The sample included 31 patients diagnosed with various EDs, such as AN, BN and BED who successfully completed the residential program from January 2022 to December 2023 (Tab. I). The majority of participants were female (97%), with an average age of 17.5 years (ranging from 13 to 35 years), an average age of onset of 15.6 years and an average disease duration of 21.5 months. Half of the patients (58%) had previous hospitalization, the majority of them had comorbidities with other psychiatric pathologies (97%) and took pharmacological therapy (90%). The average BMI at entry was 16.7, at discharge 18.9; 81% of patients presented secondary amenorrhea, 3% primary amenorrhea. In this sample, patients who had been treated for less than 1 month were considered as drop-outs from residential treatment.

**TABLE I.** Sample description.

<b>Gender</b>	30 f (97%)	1 m (3%)					
<b>Age average</b>	17,5 ± 4,3						
<b>Education</b>	5 Primary school diploma (16%)	16 middle school diploma (52%)	8 high school diploma (26%)	2 degree (6%)			
<b>Adolescent/Adult</b>	19 adolescents (61%)	12 adults (39%)					
<b>Age of onset average</b>	15,6 ± 3,8						
<b>Disease duration average (months)</b>	21,5 ± 20,1						
<b>Past hospitalization</b>	18 yes (58%)	13 no (42%)					
<b>Comorbidity</b>	30 yes (97%)	1 no (3%)					
<b>Pharmacological therapy</b>	28 yes (90%)	1 no (3%)	2 rejection (7%)				
<b>Length of stay average (days)</b>	132,1 ± 44						
<b>Diagnosis</b>	27 AN (87%)	4 BN (13%)					
<b>Admit BMI average</b>	16,7 ± 3,5						
<b>Discharge BMI average</b>	18,9 ± 2,1						
<b>Amenorrhea</b>	25 secondary (81%)	1 primary (3%)	4 no (13%)	1 np (3%)			
<b>Familiarity</b>	19 yes (61%)	12 no (39%)					
<b>Drop out</b>	1 yes (3%)	30 no (97%)					
<b>ASL</b>	12 SA (39%)	6 Na1 (19%)	5 Na2 (16%)	1 Na3 (3%)	4 Av (13%)	1 Bn (3%)	2 Ce (7%)

### Statistical analysis

To measure the statistical effects of the treatment, we used the one-way ANOVA test. This analysis allowed us to compare the means of the assessment scores at T0 and T1 to determine the significance of changes observed. Informed consent for anonymous data processing was signed by all participants in the rehabilitation programme

## RESULTS

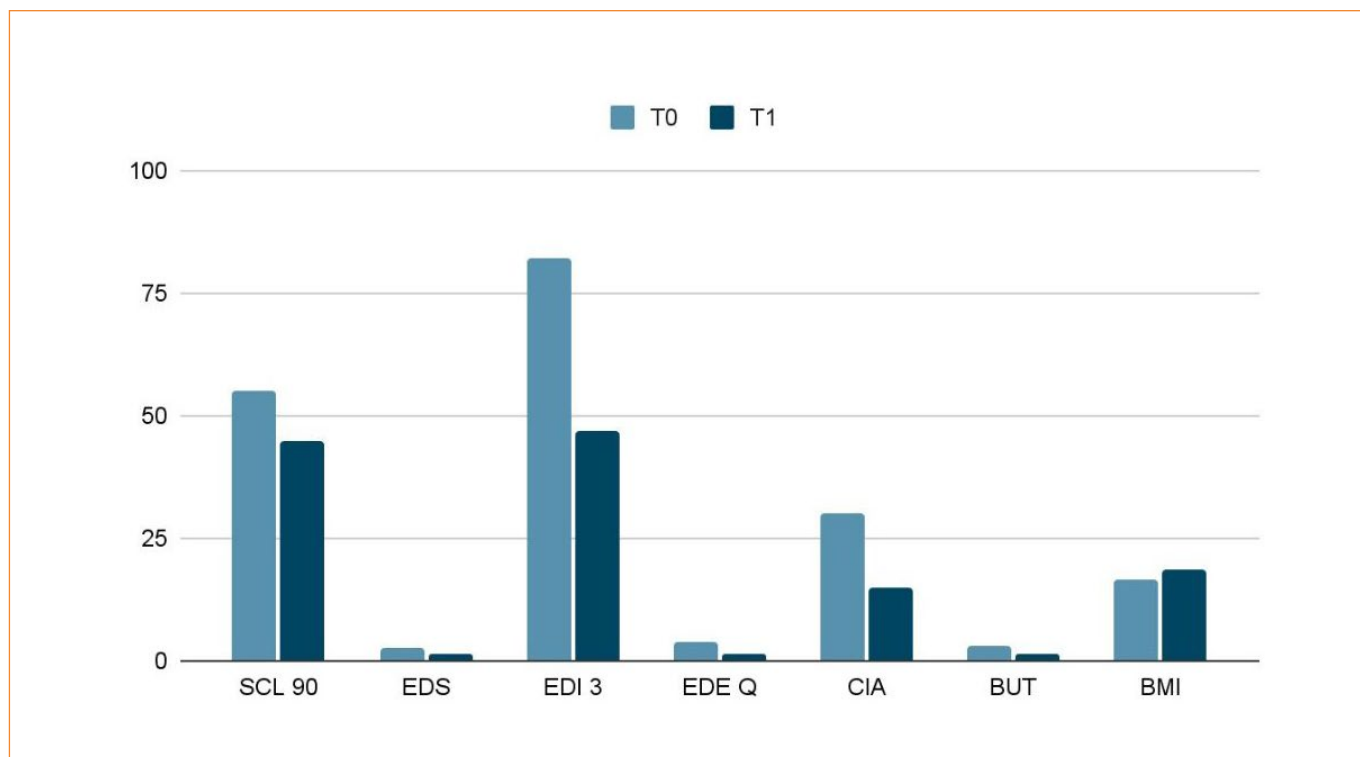
The study underscores positive results in patients with EDs undergoing treatment, showcasing improvements in psychological well-being, body image, social functioning, and reduced EDs (Fig. 1).

The SCL-90 scores indicated a marked reduction in overall psychological distress, with substantial improvement in Interpersonal hypersensitivity, Depression, Depressive ideation and Relational discomfort ( $p$ -value  $\leq 0.001$ ), but also in Dysphoria, Somatic complaints, Hostility, Somatization and Obsessive-compulsive symptoms ( $p$ -value  $\leq 0.01$ ); Anxiety and Psychoticism shows less significant improvements ( $p$ -value  $\leq 0.05$ ).

The EDI-3 scores reflected specific improvements in ED-related psychopathology, including, in particular, a reduced drive for Interpersonal alienation, Perfectionism, Fear of maturity and Hypercontrol ( $p$ -value  $\leq 0.001$ ); whereas, improvements in Affective problems and Personal alienation are less significant ( $p$ -value  $\leq 0.05$ )

The CIA scores showed a significant decrease, indicating reduced psychosocial impairment due to ED symptoms. Patients reported enhanced social functioning, better engagement in occupational activities, and an improved overall quality of life. The BUT scores demonstrated significant improvements in body image disturbances, with patients experiencing reduced body uneasiness and greater satisfaction with their body image and with substantial improvement in Positive Symptom Distress Index ( $p$ -value  $\leq 0.001$ ). The EDE-Q and EDS scores ( $p$ -value  $\leq 0.01$ ). revealed substantial reductions in ED symptomatology, with patients reporting less frequent binge eating, purging, and restrictive eating behaviors.

In particular, there was a significant improvement in BMI be-



**FIGURE 1. ADD THE CAPTION**

tween the beginning (T0) and the end (T1) of the program ( $p$ -value  $\leq 0.001$ ), underscoring the efficacy of the nutritional rehabilitation component of the treatment program.

## DISCUSSION

The “Mariconda” treatment program for EDs has shown impressive results. Patients enrolled in the program experienced significant improvements in their psychological well-being, EDs symptoms, and even weight and body measurements. This success can be attributed to several key strengths of the “Mariconda” model.

First, the program emphasizes a multidisciplinary team approach. This means a dedicated group of specialists work together to address every aspect of the ED. Psychiatrists manage the medical side of treatment, psychologists deal with emotional and relational dysfunctions, nutritionists guide patients towards healthy eating habits and psychiatric rehabilitators help with reintegration into daily life. This collaborative approach ensures patients receive holistic care that encompasses their medical, psychological, and social needs.

The core of the “Mariconda” treatment model lies in its focus on holistic care. The program doesn’t just address the symptoms of the ED, it tackles the underlying causes as well.

This involves addressing a patient’s medical needs, but also delving into the psychological factors that contribute to the disorder, such as unhelpful thought patterns and behaviors related to food and body image, as well as dysfunctional emo-

tional and relational dynamics. The program also recognizes the influence of family dynamics on EDs, and incorporates relational systemic psychotherapy to improve communication and emotional regulation within families, fostering a supportive environment for recovery.

By combining a multidisciplinary team approach with a focus on holistic care and evidence-based therapies like CBT and FBT, the “Mariconda” treatment model appears to be a comprehensive and effective approach to treating EDs. Moreover, the nutritional aspect includes personalized meal plans, nutritional education, and monitored meal sessions designed to establish healthy eating behaviors, address nutritional needs, and achieve a stable weight. Despite the encouraging outcomes, challenges like the limited sample size call for cautious interpretation and advocate for larger-scale research to boost result validity. Moreover, some clinical issues, such as emotional regulation dysfunctions and low self-esteem and personal self-awareness, require further strategies and clinical interventions to be improved.

Emphasizing long-term tracking post-treatment, especially beyond six months, would yield valuable insights into the program’s lasting impact and aid in identifying factors contributing to relapse for improved maintenance strategies. Integrating digital health tools such as telehealth and mobile applications could further improve treatment accessibility and continuity by supporting ongoing monitoring, offering additional therapeutic tools, and facilitating patient-provider interactions.



## CONCLUSIONS

The rehabilitation programme proposed by the Regional Residential Centre for EDs Mariconda has shown promising initial results. Patients enrolled in the program demonstrated substantial improvements across several critical domains. These areas of progress include clinical health, evidenced by enhanced physical well-being and stabilized vital signs, and psychopathological health, indicated by a reduction in symptoms of anxiety, depression, and other mental health conditions frequently associated with EDs. Most notably, there was a significant decline in core ED symptoms, highlighting a positive transformation in the patients' behaviors and thought patterns related to their EDs.

These findings strongly suggest that the Center's multidisciplinary and integrated treatment approach is well-suited to address the complex and multifaceted needs of individuals with EDs. This approach likely combines medical care, nutritional guidance, and psychological therapies, all delivered by a coordinated team of specialists working in unison.

However, further studies are needed to validate these preliminary results. Future research should include a larger and more diverse group of participants to ensure the generalisability of the results. In addition, extending the follow-up period to monitor patients after treatment completion would provide crucial information on the long-term effectiveness and sustainability of the programme.

This study offers significant contributions to the field of ED

treatment. It highlights the potential of residential treatment programs, like the one at "Mariconda", to deliver comprehensive care for individuals struggling with severe EDs. These programs can foster positive outcomes across various aspects of a patient's health, both physical and mental. The "Mariconda" Center's approach holds considerable promise for improving the lives of those battling EDs.

### Conflict of interest statement

The authors declare no conflict of interest.

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### Authors' contributions

F.M., A.V. and S.L.: conceptualization; F.M, A.V., S.L.:writing - original draft preparation; I.F., E.F., S.P.,and A.C.: writing - review and editing; M.D.P. and A.B.: supervision; A.L., R.B. and A.M.: investigation; S.L.: statistical analyses. All authors have read and agreed to the published version of the manuscript.

### Ethical consideration

After receiving a complete description of the study and having the opportunity to ask questions, subjects provided written informed consent.

Subjects were not paid for their participation according to Italian legislation.

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